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Stakeholders' perceptions on sustainability transition pathways of the cocoa value chain towards improved livelihood of small-scale farming households in Cameroon

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ABSTRACT

Given the persistent poor livelihood of cocoa-farming households, future climate predictions and the worldwide demand pressure for higher cocoa quality and productivity, there is still a strong need to find new approaches that guarantee a sustainable cocoa future in cocoa-producing countries amongst which Cameroon is one of them. This exploratory research investigates potential future pathways for the cocoa sector in Cameroon by mapping the perceptions of actors involved in the socio-technical regime. Qualitative expert interviews, structured questionnaires and field observation, as well as a focus group discussion have been applied to understand how a sustainability transition can be triggered. The study shows that actors envisage a sustainability change which determines their actions; however, their perceptions towards future transitions are not actively coordinated. Actors are not finding a way of adopting new organizational structures and letting a transition occur effectively, like in the case of certification standards. An alignment of perceptions and activities, and a stronger cooperation between the private and public are strongly recommended. The study encourages to consider a coordination of actors' perceptions towards future scenarios as a starting point to study sustainability transitions.

KEYWORDS

Cocoa value chain; Cameroon; sustainability transitions; cocoa certification; pathways

1. Introduction

There is a general opinion over the need to incorporate innovations, which are subject to sustainability principles, into global agri-food value chains (Devaux, Torero, Donovan, & Horton, 2018; Lee, 2005; Neven, 2014). However, a transition towards a sustainable future might not be always facilitated by the configurations of the system of actors, the value chain is composed of (Geels, 2002).

The cocoa bean (*Theobroma cacao*), for instance, is a highly globalized commodity, which represents an important cash crop for producing countries, on the one side, and is of high value for processing and consuming countries, on the other side. A total amount of 70% of the worldwide cocoa production has its origin in West Africa, for which Cameroon is the fifth largest producing country (Rueda, Helberg, Morisse, & Krain, 2014). Studies reveal that Cameroon's cocoa sector is still facing many challenges regarding sustainability

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issues (Asoh, Cheo, Schmidt, & Voigt, 2014; Geitzener & Mathé, 2018; Hütz-Adams, Huber, Knoke, Morazán, & Mürlebach, 2016; Ngougheme, Kamdem, Jagoret, & Havard, 2016). Since the sector was liberalized in the beginning of the 1990s, various actors entered and intervened in regulating it. However, interventions from civil society, public organisms, private entities and exporters seem to be uncoordinated, as the sector remains unprofitable and unsustainable, especially for the primary producers. Although initiatives already arose enhancing sustainable agriculture (like farmer trainings), the dissemination of Good Agricultural Practices (GAP) is still missing, high-quality planting materials are unavailable and the quality of the cocoa, which is mainly grown on small-scale cocoa fields by smallholder farmers, is rather low, for which they receive insufficient profits (Geitzener, Mathé, Sonfack, & Vogel, 2018). In addition, deforestation and the loss of biodiversity are major threats to the environment, which have already taken place in a major scale in cocoa-producing countries like Ivory Coast (Wessel & Quist-Wessel, 2015). Regarding the challenges and threats to the sector, as well as the various interventions that have already been made, it seems as if a transition towards a more sustainable future is hindered in this agricultural sector.

1.1. Multi-level perspective on socio-technical transitions

Diverse authors (Foxon, 2011; Fuenfschilling & Truffer, 2014; Garud & Gehman, 2012; Geels, 2011; Hofman, Elzen, & Geels, 2004; Kanger & Schot, 2019; Lamine, Renting, Rossi, Wiskerke, & Brunori, 2012; Schot & Steinmueller, 2018; Sutherland, Darnhofer, Wilson, & Zagata, 2014) have analysed how the socio-technical configuration of an innovation system (e.g. the national cocoa sector of Cameroon) changes for a transition to be triggered. This change of configuration might be related to an introduction of a new sustainable technology (Boutillier et al., 2014). It might refer to a change in institutional regulations, user practices or patterns of norms and values (Lundvall, 2010). Equally, a change into a more sustainable socio-technical environment might be induced through a change in organizational structures between actors of the system (OECD, 1997).

Geels (2002, 2004); Geels and Schot (2007) developed the multi-level perspective model (MLP) of socio-technical transitions, based on evolutionary

economics theories of Nelson and Winter (1982) and Dosi (1982), to describe how a socio-technical change takes place within networks of actors and their interrelations. According to the authors, a system consists of three contextual layers (Figure 1): (i) the socio-technical landscape at the macro-level represents political, social and cultural norms and institutions of a society; (ii) the socio-technical regime contains the prevailing routines or practices shared by actors of a particular system. Smith, Stirling, and Berkhout (2005, p. 1493) notifies that regimes '[...] embody strongly held convictions and interests concerning technological practices and the best ways these might be improved'. A regime accounts for the stability of the existing system, due to the fact that its convictions and interests provide coordination to actor groups (Sutherland et al., 2014). Thus, the regime is 'locked-in' and changes only slowly. Finally, more radical innovations are generated at the (iii) niche level, which provides a place for learning processes to occur and a space to build up the social networks supporting the breakthrough of innovations. This layer is responsible for novelties to emerge and to be taken up by the regime (Geels, 2002).

An innovation emerges through the interactions between these three layers. For instance, changes at the landscape level may pressure actors at the regime level to equally change their routines and practices, which subsequently gives opportunities for new innovations to arise out of the niche level. In other words, it is when the structures in the socio-technical regime are put in internal pressure by the landscape, that a 'window of opportunity' (Figure 1) opens up for a niche innovation at micro-level to gain momentum and to establish a new coordinated socio-technical regime (Geels, 2002).

1.1.1. The importance of perceptions in socio-technical regimes

The reason for a coordinated support is embedded in the rules and norms shared among regime actors (Geels, 2004, p. 910). Cognitive rules, shared beliefs and expectations guide actors' perceptions towards the future and steer actions in the present (Dosi, 1982; Geels, 2004; Nelson & Winter, 1982). Hence, whether niche innovations will develop is not only objective. For instance, niche actors may have different perceptions than regime actors, which can play a vital role regarding the direction of the transition (Geels & Schot, 2007; Smith et al., 2005). Thus, it can be argued that actors and their perceptions

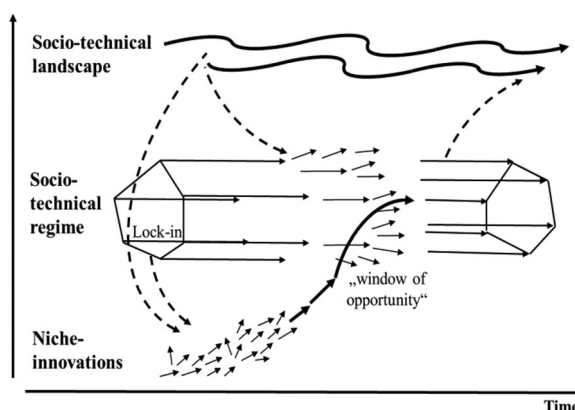


Figure 1. The three levels of socio-technical change. Source: Adapted from Geels (2002).

towards the innovation are essential for triggering transitions. As Rotmans, Kemp, and Van Asselt (2001, p. 25) state: '[...] actors can stimulate, slow down or even block a transition, so it is worthwhile to map their various action perspectives'.

Innovation and transition studies do often ignore the complexity behind organizational decision-making of adopting an innovation or triggering a transition (Häggman, 2009). Hence, they do normally not consider mapping perceptions of key actors as an additional and important starting step to understand these complex systems.

1.1.2. Socio-technical change and possible transition pathways in the cocoa sector in Cameroon

Geels (2002) theory in mind, a socio-technical change towards a more sustainable future for the cocoa sector in Cameroon might be hindered by the lock-in of its socio-technical regime. This lock-in of the regime results from the coordination in the linkages and activities between cocoa actors in the system (Geels, 2002). These groups of actors are diverse and might relate to academia (e.g. cocoa research institutes), to technology and infrastructure framing the cocoa production, to the existent market, to cocoa policies and governance or to the socio-cultural background surrounding the cocoa value chain. The coordination of their cocoa activities results out of the shared cognitive routines (Geels, 2002).

The deep structural trends of the landscape level are represented in this case by the worldwide cocoa prices, the overall economic growth of the country or environmental issues e.g. related to climate change and the pressure of European cocoa and

chocolate markets. While the cocoa regime refers to rules influencing activities, the landscape refers to external factors and is, therefore, harder to change (Geels, 2002).

Niches are also present in this cocoa sector, which are the sources of radical innovations. An example represents the already existing group of actors that are already implementing certification systems. These niches are, however, not yet developed into transitions, due to the fact that only 3% of the cocoa farmers are certified (Ngougheme et al., 2016). However, niches are crucial as they provide the seeds for change (Geels, 2002). It is only when there is an alignment between these three layers of the cocoa system that the innovation development in the niche can be reinforced by changes in the cocoa regime level and socio-technical landscape.

Geitzenauer and Mathé (2018) designed four possible transition pathways towards a more sustainable cocoa value chain in Cameroon. These are described as: (i) a *production-focused pathway*, which focuses more on developing incremental innovations at production level. This kind of pathway would be merely triggered by social groups of actors at production side, leaving out institutional groups. Due to the reason that this scenario has been mainly the situation until now, it can be regarded as a 'business-as-usual' scenario. (ii) The *certification pathway* comprises the development of the certification niche and aligning it to the cognitive rules of the socio-technical regime. All activities in the system would focus on producing cocoa under consideration of European standards and regulations. (iii) The *public-driven pathway* develops niches that strengthen a socio-technical regime related to the public sector. Here, the cocoa sector would go back to conditions

before its liberalization. And finally, (iv) the *market-driven pathway*, which would focus more on a private actor network regulating the sector.

1.2. Aim of the study

The cocoa sector in Cameroon represents a system where internal configurations seem to be locked-in, and changes are hindered towards reaching sustainability. This study aims at analysing how a sustainability transition at niche level can be triggered in this national agricultural sector which is producing a globalized resource. The exploratory and qualitative character of this research allows for the identification of possible transition pathways by mapping the perceptions of actors involved in this socio-technical regime.

The following research objectives were identified to analyze sustainability transitions in Cameroon's cocoa sector: first, (i) the perceptions of social groups of actors involved in the socio-technical regime of the cocoa value chain (active in technology, culture, politics, market, science) were analysed towards the sustainability of the sector's current situation. This aimed at understanding whether a change is even envisioned, and which challenges are perceived crucial. Accordingly, (ii) their perceptions towards future possible transitions were studied. Guided by the pathways of Geitzenauer and Mathé (2018), this study analysed the perceptions of key stakeholders of socio-technical regime towards these four possible future scenarios, including the opportunity for respondents to add other pathways aside those listed in chapter 1.1.2. Finally, (iii) interventions were identified for triggering respective niches that might develop into these transition pathways.

The following paragraphs will describe the methodology used in the exploratory study to then present the generated results, which will be finally discussed and compared with the literature on transition theory.

2. Material and methods

2.1. Data collection

While the primary data were collected following an exploratory research approach, the secondary data were derived through an extensive literature review. The exploratory data collection process started with

qualitative expert interviews (aimed at capturing individual perspectives), conducted during three months of research stay, January to April 2018. This was done with the use of an open interview guide. The discussion themes targeted at exchanging and unveiling different opinions over the best sustainable pathway for the cocoa sector. To guarantee the exploratory character of the study, the interviewer used open-ended questions to probe new areas of interest, especially in cases where new alternative transition pathways to those of Geitzenauer and Mathé (2018) (see chapter 1.1.2) were mentioned by interviewees.

Secondly, with the aim of capturing specifically the collective perspective of cocoa farmers, a focus group discussion with farmers of a cooperative was conducted, which did not follow a strict order of questions, but allowed participants to exchange in a less guided and rather free discussion. Through this method, diverse views could be collected related to the future scenarios of the cocoa sector from the perspective of cocoa producers. Results generated from this focus group were then compared with those of the upper scale actors of the value chain (included in the first method – the open interviews).

Thirdly, in order to analyse the impact on sustainability dimensions (economic, ecological and social) of each suggested pathway, a structured questionnaire targeted key stakeholders of the cocoa value chain in Cameroon. This tool scored selected criteria, which guarantee that these sustainability dimensions are fulfilled in cocoa value chains. The reason for employing a quantitative approach at this stage was to use an instrument that could complement the qualitative data by effectively comparing pathways. The selected criteria were based on international agreements of the United Nations Agenda 2030 (2016), the International Cocoa Organization (ICCO, 2007), the Food and Agricultural Organization's (FAO, 2014) principles for value chains and the African Cocoa Initiative (ACI), listed in Table 1.

Finally, structured observation during the entire period of empirical data collection took place in conferences, workshops or events that addressed information related to the subject of this study. One important source of information comprised a workshop, held by the International Institute for Tropical Agriculture (IITA) in Douala, discussing possible future developments of the cocoa sector with exporters, public organisms and development aid

Table 1. International criteria of sustainability used in the structured questionnaire.

Dimension of sustainability	Criteria that guarantees sustainability in the VC
1. Economic sustainability	High economic productivity High product quality Limited price volatility Strong investment platforms Market diversification
2. Social sustainability	Improved livelihood of poor farming households Equal distribution of the added value Equal rights for woman Eradicate child labour
3. Environmental sustainability	Resilient and sustainable food production systems Use of good agricultural practices Maintenance of the ecosystem Biodiversity conservation

Sources: Adapted from FAO (2014); United Nations (2015); ICCO (2007).

Table 2. Research methods used in the study.

Methodology	Involved stakeholders/sources	Targeted focus
Extensive literature review	Internet and bibliographic search and review of project reports, peer-reviewed publications	To gather secondary data that have been used as baseline for the study.
Open qualitative interviews	Individual farmers, cooperatives, public organizations, semi-public organizations, private companies, exporters, international buyers, researchers, development organizations	To capture individual perspectives on the possible transition pathways.
Structured questionnaire based on international criteria (depicted in Table 1)	Individual farmers, cooperatives, public organizations, semi-public organizations, private companies, exporters, international buyers, researchers, development organisations	To compare qualitative data, which were gathered through the other research methods, with quantitative data (interviewees gave values to sustainability criteria for the pathway they chose).
Focus group discussions	Cocoa farmers	To collect joint/collective perspectives of cocoa farmers on the possible transition pathways and compare them with the views of other actors interviewed in the open qualitative interviews.
Participant observation	Attending, observing and listening in local national workshops in Cameroon, as well as the International Cocoa Conference in Berlin	To triangulate all other methods with additional information.

organizations. In addition, the World Cocoa Conference held in Berlin, in April 2018, which brought together major players of the cocoa sector, was yet another source for data concerning the international discourse of future pathways for cocoa value chains in both producing and consuming countries. This method helped to add information and triangulate data generated by other research methods of the study.

Table 2 sums up the methodology used in this research.

2.2. Case study location and sample size

Data collected at production level were gathered in the Centre Region, which comprises one of the biggest cocoa-producing regions of Cameroon (Figure 2). In this province, representatives of cooperatives, composed of 300–400 farmers, were explicitly

interviewed in villages of Biakoa and Ngoumou. Exporters, public organisms and development organizations were interviewed in Yaoundé and Douala. Respondents were selected considering their position and decision-making power in their organization; thus, a purposive sampling was applied. Considering all participants of the focus group and due to the fact that some interviews were accompanied by more than one respondent, 22 respondents, in total 12 stakeholders/organisations, make up the qualitative database of this study (Table 3).

3. Results

3.1. Perceptions towards the current sustainability of the sector

Thanks to the use of open interviews, structured observation and the focus group discussion, it could



Figure 2. Case study location.

be revealed what were the overall positive characteristics of Cameroon's cocoa sector. Exporters, public organizations, developments organizations and farmers perceive the quality of the cocoa beans at field level as one of the key positive aspects of the current cocoa sector. *Public Organisation 2* agreed that the perennial nature makes the cocoa sector ecologically and economically sustainable. In addition, the soils in Cameroon's different production regions produce cocoa with a brick red colour, which is rather unique, according to the *Cocoa Buyer* encountered at the World Cocoa Conference in Berlin. Moreover, *Public Organisation 1* highlighted the variety of ecosystems within the regions of cocoa production as a specificity in Cameroon. However, when asking respondents about the overall current sustainability of the cocoa sector, all agreed that a change was needed:

It is not a good situation. It must change. We desire that it changes. [Farmer of Cooperative 2]

But in terms of the reason for its unsustainability, respondents disagreed. *Exporter 3*, for instance, maintained that high production volumes are essential for the improvement of the situation. Instead, for *Exporter 1* the reason laid on the type of governance in the system. For *Representative 2* cocoa prices determine the current state of the cocoa sector.

3.2. Transition pathways and interventions perceived as relevant by stakeholders

When asking regime actors through the open interviews which transition pathway was the most suitable one for Cameroon, different ones were chosen (see [Figure 3](#)). Likewise, using the structured questionnaire that scored sustainability criteria in each selected pathway, revealed that values, designated by respondents, varied significantly (see [Figure 4](#)). No respondent chose the 'business-as-usual' scenario. The pathway that showed great reputation amongst farmers and actors involved in the corresponding niche was the certification pathway. According to respondents during the open interviews and the focus group discussion with farmers, one of the strongest characteristics of a certification pathway is that a direct market is guaranteed, which assures fixed returns to farmers. In addition, the adoption of GAP as well as a good cocoa quality can be ensured. Increased traceability of the value chain is yet another advantage. The high costs and the concerns regarding low premium prices were some of the greatest disadvantages perceived by respondents.

The private-driven pathway was chosen by exporters and public organizations. These respondents highlighted, during the open interviews, the private sector's privileged access to financial resources. In addition, according to their values given through the

Table 3. Respondents of the study.

Stakeholder/Organisation	Type and orientation/ Mandate of organization	Person contacted (respondent)
Cooperative 1	Cocoa cooperative in the Centre Region (North of Yaoundé)	8 Farmers
Cooperative 2	Cocoa cooperative in the Centre Region (South of Yaoundé)	Farmer (facilitator in the cooperative) Cooperative Director
Public Organisation 1	Public organism that supports the national cocoa business with public programs	<i>Representative 1:</i> General Manager of the organization <i>Representative 2:</i> Sub-director of the research department
Public Organisation 2	Public organism responsible for the national cocoa quality management and the worldwide promotion of Cameroon's cocoa origin	Head of department/ exportation contracts
Public Organisation 3	Public organisms managing financial funds for the development of coffee and cocoa sectors	Director of the research team
Semi-Public Organisation 1 (Interprofessional organisation)	Advisory board that regroups actors of coffee and cocoa sectors	Director of operations
Development Organisation	International development organisation with different development projects in the cocoa sector in Cameroon	<i>Representative 1:</i> Project leader (Project: Agribusiness for Smallholder Farmers) <i>Representative 2:</i> Project leader in the South-West region (Project: Innovations for the Agricultural Sector)
Exporter 1	Small-scale coffee and cocoa exporter (< 1 million kg/year)	Director of the enterprise
Exporter 2	Medium-sized cocoa exporter (1,5 million kg/year)	Processing and Selling Officer International Cocoa Buyer working within the exporting company
Exporter 3	Large-sized cocoa exporter (59 million kg/year)	Director of the Sustainability Programme
Cocoa Buyer	International cocoa buyer and chocolate manufacturer	Head of external affairs

structured questionnaire, an increase in production volumes and productivity could be directly linked to a private sector-driven scenario (Figure 4), which would again lead to higher profits and livelihoods. However, the individualistic behaviour of public actors and the existence of monopolies in the market were perceived as great risks, revealed thanks to the open-ended questions of the interviews.

On the contrary, only public organizations were clearly in favour of a pathway driven by the public sector. These respondents valued the price stabilization mechanisms with a high score in the structured questionnaire, which can increase the quality of the cocoa and reduce the negative impact of price fluctuations (Figure 4). However, public funds were perceived by respondents as insufficient to develop the sector and the high existence of corruption would, all in all, weaken its development, as revealed in the open interviews.

Instead, five respondents did not want to choose any of the given pathways and proposed various alternative ones, which was possible thanks to the open-ended questions of the interviews. Two of those five chose a pathway which highlighted the cooperation between the public and private sectors. A representative of a development organization stated in the open interview

that all pathways were crucial for the sector. Yet another chose an alternative pathway, focusing on the integration of the young generation into different levels of the chain (from production to processing).

Results were again diverse when respondents were asked to identify specific interventions for future transitions to occur, during the open interviews. Although the same interventions could be classified for particular pathways, it seemed that many interventions were repeated within different pathways and respondents' answers did not allow to define which actor of the value chain should be responsible for a specific type of intervention. In addition, some of the interventions that, according to respondents, were already being developed, seemed to be undertaken by several different value chain actors, whereas some of them were not always aware of the activities of other regime members.

3.2.1. Relevant topics that emerged

Some topics arose throughout the study, which were repeated by various respondents during the open interviews, the structured questionnaire, the focus group discussion and at international conferences (structured observation). Diversification was one of such topics. Farmers in the focus group discussion,

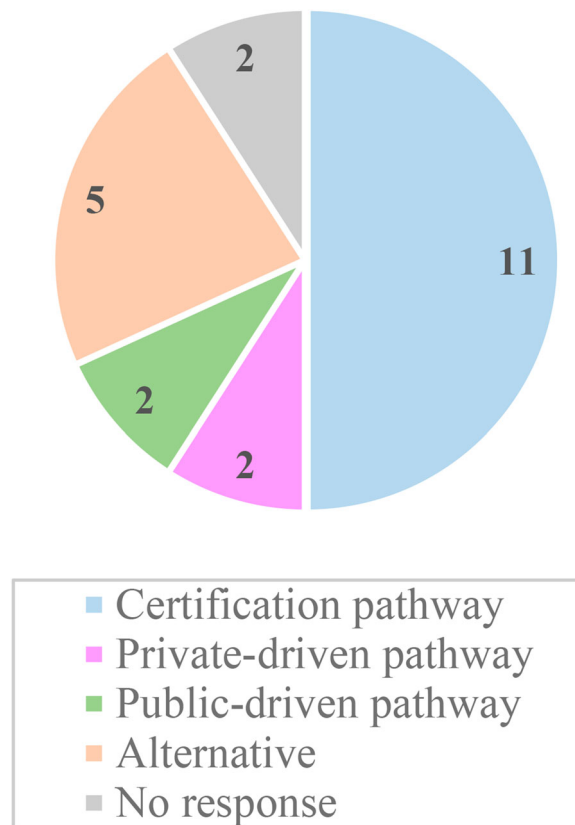


Figure 3. Pathways chosen by respondents.

public organizations, private entities and cocoa buyers at the international cocoa conference, did all mention that diversification of the market (meaning producing alternatives to cocoa beans for exportation) and crop diversification at production level (meaning expanding the crop types on the field to add further sources of income for smallholder farmers) were important aspects which needed increased attention if a sustainable future was the goal. The development of a local cocoa transformation and processing market was equally mentioned throughout the empirical data collection. Transforming cocoa beans into diversified products within national boundaries seems to be perceived as promising, as it retains the added value in the country. The alternative pathway focusing on the effective integration of the youth along the value chain (chapter 3.2) was proposed by the *Semi-Public Organisation*. However, several other respondents, e.g. the development organization, exporters and public organizations, did refer to the need of integrating the younger generation through education, land tenure, financial access and further interventions.

4. Discussion

Mainly the use of open interviews and structured observation revealed that, although some aspects of the current cocoa sector are perceived as positive, most respondents do rather perceive the current situation of the sector as unsustainable. In addition, challenges listed by respondents during the open interviews were many and diverse. It seemed as they were not articulated into one major particular problem, which, according to Smith et al. (2005), is necessary to guarantee a sustainability transition in the sector.

Uncoordinated perceptions could be observed, when respondents chose a future transition pathway during the open interviews. This result confirms that as actors give different values to innovation based on their beliefs and perceptions, different trajectories emerge (Garud & Gehman, 2012). The fact that none of the respondents chose the production-focused ('business-as-usual') pathway is a crucial result as it confirms that Cameroon's cocoa stakeholders expect

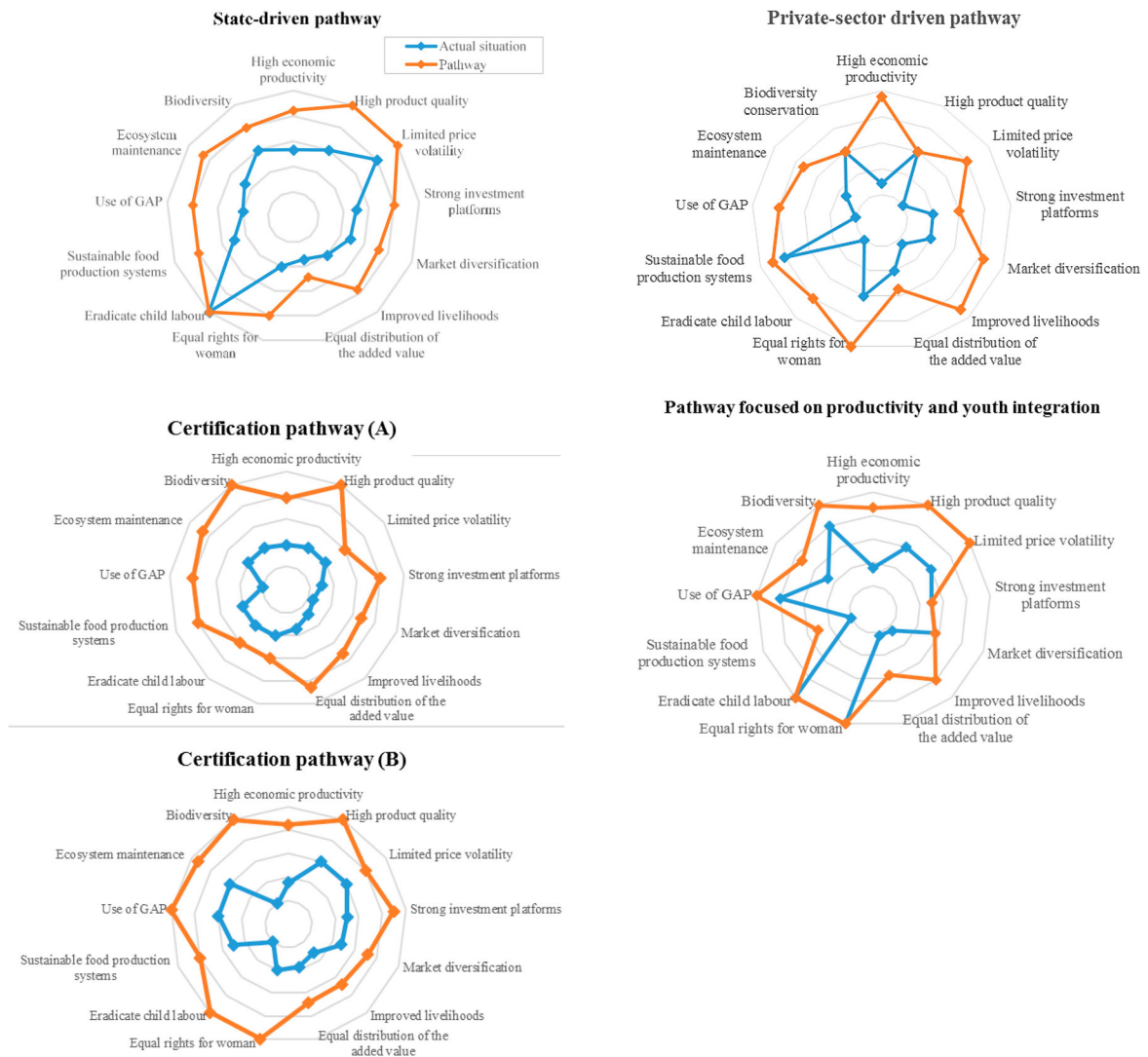


Figure 4. Values given by respondents to 13 sustainability criteria for possible transition pathways.

a change, hence a transition towards a sustainable future. Equally, as the 'business-as-usual' scenario did focus on the production level of the chain, this means that actors think a transition cannot only take place at that level, as it has mainly taken place until now, but needs further change at institutional levels, which is also addressed by Geitzenauer and Mathé (2018).

It can be concluded, through the multiple research tools used, that the current socio-technical regime of the cocoa sector in Cameroon is unstable as current activities, as well as future envisioned activities of multiple groups of stakeholders in the system cannot be aligned (Elzen, Geels, & Green, 2004). Equally, it can

be said that the emergence of sustainability transitions is hindered and their potential direction is uncertain, due to the fact that the conditions for transitions to occur (articulated problems, availability of resources and coordinated activities), are not given (Smith et al., 2005). However, it is worth mentioning that this diversity of perceptions towards sustainable future scenarios can be interpreted as a current socio-technical regime that is in a state of internal tensions, disagreement and conflict of interests, which result in a 'window of opportunity' for niche innovation to find consensus between regime actors (Geels, 2011; Sutherland et al., 2014), as stated in chapter 1. In addition, Belmin, Meynard, Julhia, and

Casabianca (2018, p. 11) highlight that the outbreak of controversies between niche – and regime actors can act as a trigger to articulate the problems and for local actors to make a collective decision for governing the innovation pathway in the system.

Hence, bearing Geels (2011)' model in mind, in a more optimistic point of view, although Cameroon's cocoa sector might be in a rather unsustainable situation, at the same time, the regime resides in circumstances where tensions between regime actors and between regime and niche actors exist. This 'window of opportunity' encourages innovations to break through and to eventually develop into coherent sustainability transitions.

4.1. Certification as a possible future scenario?

The certification-focused pathway has shown greater reputation amongst respondents, as revealed through the open interviews and the focus group discussion with farmers. Certification standards have been elaborated as tools that should bring economic, ecological and social dimensions to global value chains (Melykh & Melykh, 2016; Paschall & Seville, 2012). In this research, actors that were in favour of this pathway resulted to be the kind of actor that is already involved in certification schemes. It might be because of the international discourse in favour of certification, also observed during the international World Cocoa Conference in Berlin, that actors which are already embedded in an evolving socio-technical niche towards certification, perceive this innovation to be promising for a sustainable future. However, it has been criticized in the literature that these tools do not consider the contextual circumstances of the country. They have been declared to be top-down approaches that disregard the expectations of national stakeholders, but rather act as consumer-oriented mechanisms (Asoh et al., 2014; Getz & Shreck, 2006). That is why, in contrast, actors like public organizations and cocoa buyers, which are not directly embedded in niches supporting certification, were not entirely convinced about this innovation.

Nlend Nkott (2017)'s study on a possible certification transition within Cameroon's cocoa sector reveals that the sector has already built some structures which support the development of this innovation. Great landscape pressures like the announcement of European markets on purchasing only certified cocoa from 2020 onwards have

stimulated a market niche to develop and the regime level to change consequently, e.g. exporters have started to increasingly certify their farmers. However, this certification niche undergoes a slow development and nowadays it is still not strong enough to support the transition towards certification.

In addition, interviewed exporters have argued that there is a need for a greater research on alternative market linkages to those obligating to adopt certification. Hence, they proposed to respond to the landscape pressures by searching for new markets and innovations, rather than by adopting certification schemes. This result can be again linked to Geels (2011)' model: these perceptions might expose a future towards a rather de-alignment and re-alignment pathway (Geels & Schot, 2007), where there is a pressure in the landscape, but due to many regime problems (too many intermediaries, mix-up of qualities at port level, non-difference of prices between certified and non-certified, consumer-oriented tool based on a top-bottom approach, etc.), actors lose faith and other innovations (e.g. looking for other international markets) take advantage to emerge and break through to re-align to the pressure (the pressure of losing demand-side is re-aligned with looking and finding a new market elsewhere).

Thus, this study adds to the findings of Nlend Nkott (2017) that although structures are being built to support the certification transition, the reason for its yet low development might not only depend on the regime's development regarding infrastructure, organization of cooperatives, valorization of the quality, etc., but also greatly depends on a lack of convergence in perceptions (cognitive norms) amongst all actors involved in adopting this transition pathway.

Regarding the findings of Belmin et al. (2018), who study the socio-technical controversies between niches and regimes in the Corsican clementine sector, good governed niches are important to enrich agri-food systems, since they are sources for diversity. Hence, a certification niche might not be developed and expanded into a regime in Cameroon's cocoa sector, but it can act as an important niche in the market, if it is properly managed.

4.2. Alternative niches and novelties

Diversification of the market, local transformation and youth integration seemed to have great reputation amongst different interviewees, as revealed the

structured questionnaire. Geels (2002) manifests that because the community of actors of a socio-technical regime share the same routines, beliefs and expectations, they all search for innovations in the same direction, which eventually leads to the breakthrough of a specific innovation. Hence, the topics that were often brought up might have some potential to develop into successful innovations.

Regarding diversification, Fountain and Hütz-Adams (2018) and the United Nations (2015)' Sustainability Agenda assure that diversified crops make farmers less reliant on a single commodity, which leads to increased resilience. In addition, the Cocoa Barometer 2018 discusses that research has shown how diversification is already taking place in many cocoa households in West Africa; however, farmers still rely heavily on cocoa, because labour resources for further diversification are low and markets for diversified products are lacking (Fountain & Hütz-Adams, 2018, p. 48). Jiofack et al. (2013), for instance, have shown that there exist possibilities for diversification by undertaking a socioeconomic analysis of the African walnut (*Tetracarpidium conophorum*), which does also grow in tropical forests in South-West Cameroon. They proved its economic value and potential as a further source of income for cocoa farmers and prompted for its market development.

Local processing and transformation of the raw resource is also incorporated as a goal in the Agenda 2030 of the United Nations (2015). In Cameroon, the amount of locally processed cocoa products is still low in the current situation (about 15% of the total production) (Asoh et al., 2014; Hütz-Adams et al., 2016); however, in national cocoa exhibitions, visited during empirical research, it becomes visible how far the idea of local transformation is catching up, as several individual small-sized enterprises are already processing cocoa into cocoa liquor, powder and cosmetics, as well as into medicinal products. Hence, niche actors seem to be existent and institutional actors of the chain perceive a great opportunity in local transformation.

The alternative pathway focusing on the effective integration of the youth along the value chain was proposed by the Semi-Public Organization, but also highlighted by several other respondents. Hence, finding consensus between regime actors might not be that difficult for this potential pathway. This pathway would significantly increase the productivity and sustainability of the sector. Incorporating and facilitating job opportunities for the younger

generation is, again, also part of the goals of the United Nations (2015).

4.3. Governance of transition pathways: public- vs. market-driven cocoa sector

Few clear conclusions can be made regarding the research on a state-driven versus a market-driven transition pathway. The open interviews and the structured questionnaire show how ambiguous respondents' perceptions are towards the best governance type. It seems as it was not entirely clear for stakeholders how the roles of these two drivers (the public and the private sector) were to be determined in each future scenario. However, as Edmondson, Kern, and Rogge (2018) claim, the governance types and policy instruments do have a crucial influence on transition pathways.

Regarding the state-driven pathway, the structured questionnaire revealed that the fixation of minimum prices and the control of high quality are perceived as the strongest characteristics of this pathway (Figure 4), which is also described by Swinnen, Decoinck, Vandemoortele, and Vandeplas (2015) and Helmsing and Vellema (2012). According to Horner (2017), which seeks to identify state roles within Global Production Networks (GPN), this type of function describes the regulator role of a state, which limits and restricts the activities in the market through e.g. marketing boards like the case in Ghana or through price controls. As Juma (2011) notifies, in various African countries the government still plays a major role in directing agricultural practices, as it is in the cases of Ghana and Ivory Coast. Thus, it can be concluded that the regulatory role of states is still particularly relevant in an era of GPNs.

However, the majority of respondents, also those against a purely state-driven trajectory, chose a 'guardian' role for the state, as resulted from the open interviews. In line with the typology of Horner (2017), this definition can be set equal to the facilitator role, which encompasses the assistance within operations of the market, as well as policies that seek to limit an unequal impact of markets. In contrast to the regulator, it does not involve policies that limit and restrict the activities of firms and intervene in distribution consequences. Hence, it gives the private sector greater opportunities and decision-making power. Thus, in a private sector-driven pathway the state would act as a facilitator. Also, in this research, the private sector resulted to be a strong driver with

increased importance for this value chain. As Horner (2017) maintains, many countries across the Global South have abandoned a state-led industrialization in favour of export-oriented strategies to access and participate in foreign markets. In other words, the facilitator role of a state has attracted considerable attention and is partly being played in private-driven sectors.

Smith et al. (2005) analyze which types of governance are best suited to support transition pathways. According to their study, the governance of a socio-technical regime can influence the transition in two ways: First, it influences the selection and articulation of the pressures on the regime, and/or secondly, it can influence the adaptive capacity of a regime, which describes the coordination of resources available to adapt to these pressures. In this sense, governance interventions, such as environmental taxation, negotiated agreements and regulations, modify selection pressures towards greater sustainability, whereas interventions, such as adopting environmental management systems or distributing capital grants, modify the adaptive capacity. the government plays a major role in directing agricultural practices in African countries (Juma, 2011); however, the private sector is an increasingly important player in adapting knowledge, hence in adopting innovation. In this sense, the government might be more able to influence the articulation of pressures on the regime through policies and fiscal systems. In contrast, the private sector might be better suited for the type of governance influencing the availability of resources to trigger the transition. Regarding the fact that most of the respondents described a 'guardian' function (i.e. facilitator role) of the state, and that many interviewees did highlight the increasing importance of the private sector in e.g. financing the sector, in certification processes and developing the rural areas, it can be interpreted that this public-private governance structure is the one most actors could agree with (the state being responsible for policies, external promotion and framing, whereas the private sector being responsible for the adaptive capacity of the system).

For this governance structure to be able to exist, thus to facilitate sustainability transition pathways, Sutherland et al. (2014, pp. 83–96) sustain that collaboration between actors of the public and private sector in a regime is crucial. As highlighted in their study, a collaboration between these essential governance actors has a positive impact on the breakthrough

of a radical innovation from the niche into the regime level. Even though platforms exist in Cameroon's current sector, which intend actors of both sectors to encounter and discuss proceedings, they are not functioning properly and collaboration is currently not taking place, as respondents reiterated. Lamine et al. (2012) also show in their study on transitions towards sustainable territorial agri-food systems that there is no dominant governance mechanism, but rather an effective balance between mechanisms and a re-definition of the roles of the state, the market and civil society groups. Equally, public-private partnerships and bottom-up approaches, as well as active citizen's involvement play important roles. These arguments were mentioned by those respondents choosing the public-private pathway as the most promising one.

Hence, concluding, according to the literature and the perceptions of stakeholders, impulses from both the policy side and the market side, are important for sustainability transitions to occur. Interventions should, hence, rather focus on how collaboration between these two drivers can be sustainably ensured.

Another important aspect of governance is the aspect of agency and power. According to Smith et al. (2005, p. 1503), agency is described as 'the ability to intervene and alter the balance of selection pressures or adaptive capacity', hence to intervene in transition processes. These researchers sustain that there is a need for political, economic and institutional power to exercise and trigger transition. Two important conclusions can be drawn regarding the agency parameter in this study: First, that no single actor has enough resources to coordinate a response to landscape pressures; hence, that a transition in Cameroon can be triggered through the network of 'resource-interdependent' actors, which includes the public and private organizations. Secondly, respondents assured that cocoa farmers, which after all are important regime actors, had, compared to other regime members, little decision-making power to decide on their own future. On their own they have, hence, little agency and power to intervene in transition processes. In this sense, as merely all respondents of this research have emphasized it, strengthening cooperatives and attributing power and agency to farmers themselves, is still a great necessity and might signify another important trigger for coherent organization in the regime and eventually the breakthrough of transitions.

5. Conclusion

The study aimed to analyze how a sustainability transition can take place in the current cocoa sector in Cameroon that induces a higher cocoa quality and livelihood of farming households, without negatively harming the environment. This should be identified through the perspectives of actors, which are themselves involved in the system.

The results revealed a general incoherence in the perceptions of actors within the current socio-technical regime representing Cameroon's cocoa sector. Although a sustainability change is envisaged, perceptions towards future outcomes are not actively coordinated. This lack of coordination is impeding niche innovations to find consensus, thus, regime actors are not finding a way of adopting new organizational structures and letting a transition occur effectively, like in the case of certification. In other words, an organizational innovation is needed in this system, which induces a transition into a more sustainable and profitable cocoa sector, having no negative effects on the livelihood of farming households, which are nowadays bearing all the negative impacts of a failed system-governance.

However, results have also shown that there are some possibilities for novelties to arise, where actors have shown acceptance and compliance towards them, especially in the fields of youth integration, diversification of the product and local transformation. In addition, a unique governance type for triggering this transition could not be determined, rather a stronger cooperation-network between public and private entities is promising.

Hence, future research that considers perceptions of actors would enhance the understanding of sustainability transition processes. On the policy side, coordinating the national cocoa regime and attributing agency power to essential actors, who are currently left out in the decision-making, would, all in all, strengthen the capacity of Cameroon's cocoa sector to sustainably adapt to pressures. Equally, an in-itself effectively organized and autonomous national system would enhance the sustainability performance and governance of this globalized resource value chain.

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